Attachment C: Definitions and Reporting Categories

EM has shifted the focus away from program-oriented data collection for planning, budgeting, and performance reporting. This section provides integrated definitions for use in planning, budgeting, and performance measures. The definitions are organized by activities associated with Waste, Remediation, Stabilization/Deactivation, and Operations. The estimated Budget Authority (B/A) that is collected and reported for EM's measures and the "other" categories identified herein are not required to be of audit quality. The table below correlates with the definitions that are subsequently provided in this attachment.

Performance Measure/Quantity	Estimated BA	Category	Subcategory
WASTE ACTIVITIES			
✓	✓	High Level Waste (m^3)	Storage
✓	✓	High Level Waste (m^3)	Treatment
✓	✓	High Level Waste (canisters)	Canisters Produced
N/A	✓	High Level Waste	Construction
✓	✓	Transuranic Waste (m^3)	Storage
✓	✓	Transuranic Waste (m^3)	Treatment
✓	✓	Transuranic Waste (m^3)	On-Site Disposal
✓	✓	Transuranic Waste (m^3)	Shipped to DOE Disposal Site
N/A	✓	Transuranic Waste (m^3)	Construction
✓	✓	Mixed Low Level Waste (m^3)	Storage
✓	✓	Mixed Low Level Waste (m^3)	Treatment
✓	✓	Mixed Low Level Waste (m^3)	On-Site and Commercial Disposal
✓	✓	Mixed Low Level Waste (m^3)	Shipped to DOE Disposal Site
N/A	✓	Mixed Low Level Waste (m^3)	Construction
✓	✓	Low Level Waste (m^3)	Storage
✓	✓	Low Level Waste (m^3)	Treatment
✓	✓	Low Level Waste (m^3)	On-Site and Commercial Disposal

Performance Measure/Quantity	Estimated BA	Category	Subcategory
✓	✓	Low Level Waste (m^3)	Shipped to DOE Disposal Site
N/A	✓	Low Level Waste (m^3)	Construction
✓	✓	Hazardous Waste (metric tons)	DOE On-Site Disposal
✓	✓	Hazardous Waste (metric tons)	Commercial Waste
N/A	✓	Hazardous Waste (metric tons)	Construction
✓	N/A	Remediation Waste	Remediation Waste Generated
N/A	✓	All Other Waste Types	All Other Waste Types
N/A	✓	All Other Waste Types	Construction
REMEDIATION ACTIVITIES			
✓	✓	Release Sites	Assessments
✓	✓	Release Sites	Cleanups
N/A	✓	Release Sites	Disposal Facility (Design/Construction/ Operation)
N/A	✓	Release Sites	Potentially Responsible Party (PRP) Payments
N/A	✓	Release Sites	Groundwater Remediation
N/A	✓	Release Sites	Provision of Alternative Water Supply
N/A	✓	Release Sites	Post Remedial Action (RA) Long-Term S&M
✓	✓	Facilities	Decommissioning - Assessments
✓	✓	Facilities	Decommissioning-Cleanups
N/A	✓	Facilities	Pre-Decommissioning S&M
NUCLEAR MATERIAL AND SPENT NUCLEAR FUEL (SNF) STABILIZATION & FACILITY DEACTIVATION ACTIVITIES			
✓ -	- ✓	Facilities	-Facilities not yet deactivated/ Facilities Monitored - Surveillance & Maintenance

Performance Measure/Quantity	Estimated BA	Category	Subcategory
✓ -	- ✓	Facilities	- Facilities deactivated during period -Deactivation
✓	✓	Facilities	- Facilities in Post-Deactivation Monitoring - Post-Deactivation Long-Term Monitoring
N/A	✓	Facilities	Deactivation - Construction
N/A	✓	Nuclear Materials	Surveillance & Maintenance
N/A	✓	Nuclear Materials	Stabilization
N/A	✓	Nuclear Materials	Construction
✓	N/A	Nuclear Materials	Stabilized – Plutonium Solution (liters)
✓	N/A	Nuclear Materials	Stabilized – Plutonium Residue (kg bulk)
✓	N/A	Nuclear Materials	Stabilized – Plutonium Metal/Oxides (containers)
✓	N/A	Nuclear Materials	Stabilized – Uranium Solution (liters)
✓	N/A	Nuclear Materials	Stabilized – Uranium in Other Forms (kg bulk)
✓	N/A	Nuclear Materials	Stabilized – Other Nuclear Material in Solution Form (liters)
✓	N/A	Nuclear Materials	Stabilized – Other Nuclear Material in Other Forms (handling units)
✓	N/A	Nuclear Materials	Made Disposition Ready – Plutonium Metal/Oxides or in Other Forms (containers)
✓	N/A	Nuclear Materials	Made Disposition Ready – On-Site – Uranium Solution (liters)
✓	N/A	Nuclear Materials	Made Disposition Ready – Ship Off-Site – Uranium Solution (liters)
✓	N/A	Nuclear Materials	Made Disposition Ready – On-Site – Uranium in Other Forms (kg bulk)

Performance Measure/Quantity	Estimated BA	Category	Subcategory
✓	N/A	Nuclear Materials	Made Disposition Ready – Ship Off-Site – Uranium in Other Forms (kg bulk)
✓	N/A	Nuclear Materials	Made Disposition Ready – Other Nuclear Materials in Solution Form (liters)
✓	N/A	Nuclear Materials	Made Disposition Ready – Other Nuclear Material in Other Forms (containers)
	✓	Spent Nuclear Fuel (SNF)	Surveillance & Maintenance
	✓	SNF	Stabilization
	✓	SNF	Construction
✓	N/A	SNF*	SNF in stabilization process, but not yet stabilized (MTHM and $m^{3)}$
✓	N/A	SNF*	SNF stabilized during period (MTHM and m^3)
✓	N/A	SNF*	Stable SNF, not disposition ready (MTHM and m^3)
✓	N/A	SNF*	SNF made disposition ready during period (MTHM and m^3)
✓	N/A	SNF*	SNF in disposition ready storage (MTHM and m^3)
✓	N/A	SNF**	Quantity of SNF Treated for Stabilization/Disposal
✓	N/A	SNF**	Quantity of SNF Moved to Dry Storage
✓	N/A	SNF**	Quantity of SNF Prepared and Shipped for Consolidation
OPERATIONAL ACTIVITIES			
N/A	✓	Operational	Technical Program Support
N/A	✓	Operational	Conceptual Design Reports
N/A	✓	Operational	Other Project Related Bridge Costs
N/A	✓	Operational (Albuquerque only)	Uranium Leasing

Performance Measure/Quantity	Estimated BA	Category	Subcategory
N/A	✓	Operational	Landlord
N/A	✓	Operational	Landlord - Construction
N/A	✓	Operational	Agreements-in-Principle (AIPs)/Grants
N/A	✓	Operational	Security Investigations
N/A	✓	Operational	Nuclear Criticality Safety Training (Field input required for FY 1998 & FY 1999; HQ input required for FY 2000)
MULTI-SITE ACTIVITIES – THIS IS FOR HEADQUARTERS USE ONLY–			
N/A	✓	National Program	Transportation and Packaging Management
N/A	✓	National Program	Emergency Preparedness Program
N/A	✓	National Program	National Analytical Management Program
N/A	✓	National Program	Pollution Prevention
N/A	✓	National Program	Environmental & Regulatory Analysis
N/A	✓	National Program	Packaging Certification & Safety
N/A	✓	Science and Technology	Risk Policy
N/A	✓	Science and Technology	Science Program
N/A	✓	Science and Technology	Technology Development
N/A	✓	Operational	Intergovernmental Affairs/Public Accountability
N/A	✓	Operational	Technical Training and Education
N/A	✓	Operational	Federal Contribution to UE D&D Fund
N/A	✓	Operational	Uranium/Thorium Reimbursement
N/A	✓	Program Direction	Program Direction

*These spent nuclear fuel performance measures categories and subcategories are ONLY VALID FOR THE YEARS PRIOR TO FY 2001.

**These spent nuclear fuel performance measures categories and subcategories are ONLY VALID FOR FY 2001 AND BEYOND.

Performance Measures/Estimated B/A Definitions

WASTE ACTIVITIES

The new direction is to capture EM-managed waste in a more comprehensive manner in the waste quantity and budget categories. Specifically, waste managed under the Environmental Restoration Program was not previously included. In the future such wastes, except for Remediation Waste, are to be included in the waste performance measures and budget categories.

Remediation Waste is defined as all waste generated, as limited below, as a result of remedial action and D&D activities performed under CERCLA, RCRA or comparable state statute that has a disposition of direct disposal (on-site or off-site) with or without treatment. This includes waste resulting from assessment, cleanup and monitoring and surveillance activities. Remediation Waste quantities will be collected through the IPABS annual data collection update, but are not tracked as a performance measure. Funding associated with Remediation Waste should only be incorporated within the appropriate budget categories under remediation activities (i.e., remedial action/release sites, facility decommissioning); funding for management of Remediation Waste is not to be reported under the waste activities (i.e., waste treatment, storage, and disposal).

Remediation Waste is limited to waste generated by remedial action and D&D activities that stays within the generating program, e.g., waste generated under a CERCLA cleanup program that is disposed of directly within a CERCLA disposal cell. Any other waste is not considered Remediation Waste and is to be counted under waste quantity and budget categories.

With this definition of Remediation Waste, certain wastes being managed by the Environmental Restoration Program that were not generated by remedial action or D&D activities, e.g., waste inherited from other programs at Portsmouth, Paducah and Fernald, are not considered Remediation Wastes and are to be included in the waste quantity and budget categories.

The corporate performance measures for waste activities focus on storage, treatment, and disposal of four radioactive waste types: high-level waste, transuranic waste, mixed low-level waste, and low-level waste. The budget categories capture funding for storage, treatment, and disposal of these four radioactive waste types. There are also budget categories for management of hazardous waste as well as a category for “All Other Waste Types.” However, the hazardous waste and “All Other Waste Types” categories are not tracked as performance measures, although quantity data will be collected for hazardous waste disposal only. Quantity data for “All Other Waste Types” are not planned to be collected.

Waste performance measures categories contain planned and actual quantities of waste stored, treated, and disposed, for four radioactive waste types. With the exception of Remediation Waste, volumes reported represent all waste that is stored, treated, and disposed by EM, either onsite or at commercial facilities. Volumes are reported in cubic meters, except Hazardous Waste, which is reported in metric tons, and High-Level Waste Canisters Produced, which is reported in number of canisters.

Waste that is planned to be transferred to another program due to the re-engineering of Environmental Management should not be included in the waste performance measures after the planned transfer date.

The definitions that follow represent an integrated set of guidance that encompasses both performance measures and budget categories. In most cases, a further description related to waste quantity data is provided for clarification in performance measurement. Note that the waste type definitions have incorporated certain changes that will be reflected in the revised DOE Order 435.1, *Radioactive Waste Management*.

High-Level Waste

This category includes all activities associated with the storage, treatment, and disposal of High-level Waste (HLW). **High-level waste** is the highly radioactive waste material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and other highly radioactive material that is determined, consistent with existing law, to require permanent isolation.

- **Storage:** is defined as the collection and management of waste for the purposes of awaiting treatment or disposal capacity, in such a manner as to not constitute disposal of waste. The costs of the following activities are included in HLW storage (as applicable and as related to storage activities):
  - waste documentation for, and acceptance by, storage facilities;
    - on-site collection of waste from generators;
    - transportation to storage facilities (including emergency truck operations),
  - waste tracking and data recording;
    - characterization of waste management generated waste and process chemicals and verification of program generated waste;
    - operations, surveillance and maintenance of storage facilities and ancillary components such as tank cooling and ventilation systems, piping and diversion boxes and pits;
    - inspections and record keeping;
    - environment, safety, and health (ES&H) including Conduct of Operations, National Environmental Policy Act (NEPA), procedures, training, quality assurance, permits, recycling, waste minimization, safety analysis reports (SARS), occurrence reporting and processing system (ORPS), and technical support;
    - capital equipment and general plant projects to maintain storage facilities;
    - generator fees paid and received; and,
    - program management/support costs directly related to storage.

The HLW Storage performance measure tracks the total inventory of untreated HLW that is in the storage tanks, plus other non-disposal ready HLW (e.g., calcined waste) in storage facilities at EM sites. HLW storage does not include the volume of vitrified HLW in canisters, which is tracked separately as HLW Canisters Produced. Storage measures the volume of waste at a specific point in time, at mid-year and end of fiscal year. It is not a measure of cumulative volume, peak volume, or tracking of activity during the year.

- **Treatment:** is any method, technique, or process designed to change the physical or chemical character of waste to render it less hazardous; safer to transport, store, or dispose of; or reduce its volume. This category includes the costs of all activities related to treatment of HLW, including preparation of waste going directly to treatment. During the HLW treatment process, a low-activity fraction of waste is produced. This "incidental" waste is treated and disposed as low-level waste and funding is captured under low-level waste. The costs of the following activities are also included in HLW treatment (as applicable and as related to treatment activities):
  - any additional characterization, waste conditioning, pretreatment, actual treatment;
  - laboratory analysis for pre-treatment;
  - characterization and preparation required for transport to treatment activities;
  - waste documentation for, and acceptance by, treatment facilities;
  - transportation to treatment facilities including emergency truck operations, waste tracking and data recording;
  - verification/characterization of waste before treatment or pretreatment, waste for development operations and process chemicals;
  - operations, surveillance and maintenance (preventive and corrective) of facilities including safety support systems, outfall monitoring and sample and analysis, inspections and assessments (fire, safety and life support systems), repackaging, spill cleanup, waste containers, record keeping;
  - ES&H including health physics and industrial hygiene, Conduct of Operations, NEPA, procedures, training, permits, SARS, ORPS, quality assurance (both in support of OCRWM requirements and to meet 10 CFR 834.120), and technical support;
  - capital equipment and general plant projects to maintain treatment facilities;
  - identification and evaluation of treatment and waste minimization options;
  - treatability studies;
  - generator fees paid and received, as well as transportation costs of the treated waste back to the generator, if applicable; and,
  - program management/support costs directly related to treatment.

The HLW Treatment performance measure represents the volume of waste going into treatment (i.e., vitrification, solidification, incineration, compaction/supercompaction, size reduction, evaporation/concentration, etc.). The volume of waste that undergoes characterization is not counted as treatment. HLW treatment represents the volume of highly radioactive material (sludge and precipitate) that is processed into glass, or otherwise treated (i.e., evaporation/concentration, calcination, et al.) During the HLW treatment process, a low-activity fraction of waste is produced. This "incidental" waste is treated and disposed as low-level waste, and is reported under the LLW performance measures.

- **HLW Canisters Produced:** Environmental Management does not pay for transportation to and disposal of HLW in the Federal HLW repository, so there is no budget category for HLW disposal. Funding is reported for producing HLW disposal-ready canisters instead. This category includes the costs related to the production of HLW canisters, including the long-term storage of HLW canisters that remain in EM's inventory because a permanent repository is not available. The costs of the following activities are also included in HLW Canisters Produced (as applicable and as related to HLW canister production and storage):
  - storage and shipping records;
  - preparation and packaging for transportation to disposal facilities; on-site manifesting, as required;

- verification/characterization when required for disposal;
- operations/surveillance and maintenance (preventive and corrective) of facilities including inspections, spill cleanup, record keeping, leachate monitoring, assays of packaging or repackaging materials, and closure activities;
- ES&H including Conduct of Operations, NEPA, procedures, training, permits, recycling, waste minimization, quality assurance, SARS, ORPS, and technical support;
- capital equipment and general plant projects to maintain disposal ready facilities;
- identification and evaluation of disposal options; and,
- program management/support costs directly related to disposal-ready waste.

The unit of measure for the HLW Canisters Produced performance measure is canisters of vitrified HLW produced during the fiscal year.

Transuranic Waste

This category includes all activities associated with the storage, treatment, and disposal of TransuranicWaste. **Transuranic (TRU) Waste** is radioactive waste containing more than 100 nanocuries of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years, except for:

(a) High-level radioactive waste;

(b) Waste that the Secretary of Energy has determined, with the concurrence of the Administrator of the Environmental Protection Agency, does not need the degree of isolation required by the 40 CFR Part 191 disposal regulations; or

© Waste that the Nuclear Regulatory Commission has approved for disposal on a case-by-case basis in accordance with 10 CFR Part 61.

This DOES NOT include Remediation Waste.

- **Storage:** is the collection and management of waste for the purposes of awaiting treatment or disposal capacity, in such a manner as to not constitute disposal of waste. This category includes the costs related to the storage of TRU waste, including long-term storage of disposal-ready certified waste that meets current waste acceptance criteria for disposal. The costs of the following activities are also included in TRU storage (as applicable and as related to storage activities):
  - waste documentation for, and acceptance by, storage facilities;
  - on-site collection of waste from generators;
  - transportation to storage facilities including truck operations, on-site manifesting and unloading;
  - waste tracking and data recording;
  - characterization of TRU in inventory and verification of program generated waste;
  - operations, surveillance and maintenance of facilities including inspections, repackaging, spill cleanup, waste containers, and record keeping;
  - ES&H including Conduct of Operations, NEPA, procedures, training, quality assurance, permits, recycling, waste minimization, SARs, ORPS, and technical support;
  - capital equipment and general plant projects to maintain storage facilities;
  - generator fees paid and received; and,
  - program management/support costs directly related to storage.

The TRU Storage performance measure tracks the total of contact-handled (CH) and remote-handled (RH) TRU waste being managed in storage facilities at EM sites. This volume includes existing waste in inventory as well as newly generated waste which is stored temporarily pending treatment or disposal. It also includes disposal-ready certified waste that meets current waste acceptance criteria and is ready for shipment to the Waste Isolation Pilot Plant. Storage measures the volume of waste at a specific point in time, at mid-year and end of fiscal year. It is not a measure of cumulative volume, peak volume, or tracking of activity during the year.

- **Treatment:** is any method, technique, or process designed to change the physical or chemical character of waste to render it less hazardous; safer to transport, store, or dispose of; or reduce its volume. This category includes the costs of all activities related to treatment of TRU Waste, including retrieval and preparation of waste going directly to treatment; any additional characterization required for waste directly before treatment; the actual treatment; lab packing for pre-treatment; and the sorting, segregation, and characterization required for transport to treatment activities. The costs of the following activities are also included in TRU treatment (as applicable and as related to treatment activities):
  - waste documentation for, and acceptance by, treatment facilities;
  - preparation and packaging for transportation to treatment facilities;
  - on-site collection of waste from generators for transportation to treatment facilities;
  - transportation to treatment facilities including truck operations, on-site manifesting, as required, and unloading;
  - waste tracking and data recording;
  - verification/characterization of waste specific to treatment or pretreatment including RCRA compliance sampling and analysis, assay, surface contamination survey, visual inspection, weight and dose;
  - operations, surveillance and maintenance (preventive and corrective) of facilities including safety support systems, outfall monitoring and sample and analysis, inspections (fire, safety and life support systems), repackaging, spill cleanup, waste containers, record keeping, health physics, and industrial hygiene;
  - ES&H including Conduct of Operations, NEPA, procedures, training, permits, SARs, ORPS, quality assurance, and technical support;
  - capital equipment and general plant projects to maintain treatment facilities;
  - identification and evaluation of treatment and waste minimization options;
  - treatability studies;
  - generator fees paid and received, as well as transportation costs of treated waste back to the generator, if applicable; and,
  - program management/support costs directly related to treatment.

  The TRU Treatment performance measure represents the volume of waste going into treatment (i.e., vitrification, solidification, incineration, compaction/supercompaction, size reduction, evaporation/concentration, etc.). The volume of waste that undergoes characterization is not counted as treatment.

- **Disposal:** is the emplacement of waste in a manner that ensures protection of human health and the environment within prescribed limits for the foreseeable future with no intent of retrieval and that requires deliberate action to regain access to the waste. This category includes the costs of all activities related to the disposal of TRU waste. Disposal activities begin with any additional

packaging required for disposal and certification so that the material meets the disposal facilities' waste acceptance criteria, and includes activities for either on-site or off-site disposal. The costs of the following activities are also included in TRU disposal (as applicable and as related to disposal activities):

- waste documentation for, and acceptance or certification by, disposal facilities;
- preparation and packaging for transportation to disposal facilities;
- on-site collection of waste from generators for transportation to disposal facilities;
- transportation to disposal facilities including truck operations, on-site manifesting, as required, and unloading;
- verification/characterization when required for disposal;
- operations, surveillance and maintenance (preventive and corrective) facilities including inspections, repackaging, spill cleanup, waste containers, record keeping, leachate monitoring, assays packaging or repackaging materials, and closure activities;
- ES&H including Conduct of Operations, NEPA, procedures, training, permits, recycling, waste minimization, quality assurance, SARs, ORPS, technical support, performance assessment activities; - capital equipment and general plant projects to maintain disposal facilities;
- identification and evaluation of disposal options;
- generator fees paid and received; and
- program management/support costs directly related to disposal.

The **TRU On-site Disposal** performance measure category tracks the volume of waste that EM disposes on-site at the Waste Isolation Pilot Plant (WIPP). This category is completed only by Carlsbad Area Office (CAO).

TRU Shipped to DOE Disposal Site is the amount of TRU waste that has been shipped to Carlsbad for disposal at WIPP. However, until disposal operations begin at WIPP, this measure will record the amount of TRU waste that has been certified as meeting current waste acceptance criteria and has been prepared for shipment during the fiscal year, but can not be shipped.

Mixed Low-Level Waste

This category includes all activities related to the storage, treatment, and disposal of mixed low-level waste (MLLW). **Mixed low-level waste** is radioactive waste that radiologically meets the definitions for low-level waste and which also contains a hazardous component as defined under RCRA. This also includes PCB-contaminated low-level waste regulated under TSCA.

- **Storage:** is the collection and management of waste for the purposes of awaiting treatment or disposal capacity, in such a manner as to not constitute disposal of waste. This category includes the costs of all activities relating to the storage of MLLW, including long-term storage of disposal-ready certified waste that meets current waste acceptance criteria for disposal. The costs of the following activities are also included in MLLW storage (as applicable and as related to storage activities):
  - waste documentation for, and acceptance by, storage facilities;
  - on-site collection of waste from generators;
  - transportation to storage facilities including truck operations, on-site manifesting and unloading;

- waste tracking and data recording;
- characterization of waste management generated waste and verification of program generated waste;
- operations, surveillance and maintenance of facilities including inspections, repackaging, spill cleanup, and record keeping;
- ES&H including Conduct of Operations, NEPA, procedures, training, quality assurance, permits, recycling, waste minimization, SARs, occurrence reporting, and technical support;
- capital equipment and general plant projects to maintain storage facilities;
- generator fees paid and received; and,
- program management/support costs directly related to storage.

The MLLW Storage performance measure tracks the total inventory of all waste being managed in storage facilities at EM sites. This volume includes existing waste in inventory as well as newly generated waste which is stored temporarily pending treatment or disposal. It also includes long-term storage of treated waste awaiting disposal. Storage measures the volume of waste at a specific point in time, at mid-year and end of fiscal year. It is not a measure of cumulative volume, peak volume, or tracking of activity during the year.

- **Treatment:** is any method, technique, or process designed to change the physical or chemical character of waste to render it less hazardous; safer to transport, store, or dispose of; or reduce its volume. This category includes the costs of all activities related to treatment of MLLW, including preparation of waste going directly to treatment; any additional characterization required for waste directly before treatment; the actual treatment; lab packing for pre-treatment; and the sorting, segregation, and characterization required for transport to treatment activities. The costs of the following activities are also included in MLLW treatment (as applicable and as related to treatment activities):
  - waste documentation for, and acceptance by, treatment facilities;
  - preparation and packaging for transportation to treatment facilities;
  - on-site collection of waste from generators for transportation to treatment facilities;
  - transportation to treatment facilities including truck operations, on-site manifesting, as required, and unloading;
  - waste tracking and data recording;
  - verification/characterization of waste specific to treatment or pretreatment including RCRA compliance sampling and analysis, assay, surface contamination survey, visual inspection, weight and dose;
  - operations, surveillance and maintenance (preventive and corrective) of facilities including safety support systems, outfall monitoring and sample and analysis, inspections (fire, safety and life support systems), repackaging, spill cleanup, waste containers, record keeping, health physics, and industrial hygiene;
  - ES&H including Conduct of Operations, NEPA, procedures, training, permits, SARs, ORPS, quality assurance, and technical support;
  - capital equipment and general plant projects to maintain treatment facilities;
  - identification and evaluation of treatment and waste minimization options;
  - treatability studies;

- generator fees paid and received, as well as transportation costs of the treated waste back to the generator, if applicable; and,
- program management/support costs directly related to treatment.

The MLLW Treatment performance measure represents the volume of waste going into treatment (i.e., vitrification, solidification, incineration, compaction/supercompaction, size reduction, evaporation/concentration, etc.). The volume of waste that undergoes characterization is not counted as treatment. Treatment includes volumes treated on-site in DOE facilities or sent off site for treatment at commercial or DOE facilities and then returned to the originating site. Waste that is shipped to a commercial facility for both treatment and disposal should be reported under the Disposal measure. Waste that is shipped to another DOE site for both treatment and disposal should be reported under the shipped to DOE Disposal Site measure.

- **Disposal:** is the emplacement of waste in a manner that ensures protection of human health and the environment within prescribed limits for the foreseeable future with no intent of retrieval and that requires deliberate action to regain access to the waste. This category includes the costs of all activities related to the disposal of MLLW. Disposal activities begin with any additional packaging required for disposal and certification so that the material meets the disposal facility's waste acceptance criteria, and includes activities for either on-site or off-site disposal. The costs of the following activities are also included in MLLW disposal (as applicable and as related to disposal activities):
  - waste documentation for, and acceptance or certification by, disposal facilities;
  - preparation and packaging for transportation to disposal facilities;
  - on-site collection of waste from generators for transportation to disposal facilities;
  - transportation to disposal facilities including truck operations, on-site manifesting, as required, and unloading;
  - verification/characterization when required for disposal;
  - operations, surveillance and maintenance (preventive and corrective) of facilities including inspections, repackaging, spill cleanup, waste containers, record keeping, leachate monitoring, assays packaging or repackaging materials, and closure activities;
  - ES&H including Conduct of Operations, NEPA, procedures, training, permits, recycling, waste minimization, quality assurance, SARs, ORPS, technical support, and performance assessment activities;
  - capital equipment and general plant projects to maintain disposal facilities;
  - identification and evaluation of disposal options;
  - generator fees paid and received; and
  - program management/support costs directly related to disposal.

The **MLLW On-site and Commercial Disposal** performance measure category tracks the volume of mixed low-level waste that EM disposes on-site at DOE-owned facilities, plus the volume of waste shipped off-site to commercial facilities for disposal or both treatment and disposal. The

MLLW Shipped to DOE Disposal Site is the performance measure category where generator sites report volumes of waste that are shipped to another DOE site for disposal, including treatment and storage prior to disposal, so that it is not double counted in rolled up program totals.

Low-Level Waste

This category includes all activities related to the storage, treatment, and disposal of low-level waste (LLW). **Low-Level Waste** is radioactive waste, including accelerator-produced waste, that is not high-level radioactive waste, spent nuclear fuel, transuranic waste, byproduct material (as defined in section 11e.(2) of the *Atomic Energy Act of 1954*), or naturally occurring radioactive material. This DOES NOT include Remediation Waste.

- **Storage**: is the collection and management of waste for the purposes of awaiting treatment or disposal capacity, in such a manner as to not constitute disposal of waste. This category includes the costs of all activities relating to the storage of LLW, including long-term storage of disposal-ready certified waste that meets current waste acceptance criteria for disposal. The costs of the following activities are also included in LLW storage (as applicable and as related to storage activities):
  - waste documentation for, and acceptance by, storage facilities;
  - on-site collection of waste from generators;
  - transportation to storage facilities including truck operations, on-site manifesting and unloading;
  - waste tracking and data recording;
  - characterization of waste management generated waste and verification of program generated waste;
  - operations, surveillance and maintenance of facilities including inspections, repackaging, spill cleanup, and record keeping;
  - ES&H including Conduct of Operations, NEPA, procedures, training, quality assurance, permits, recycling, waste minimization, SARs, occurrence reporting, and technical support;
  - capital equipment and general plant projects to maintain storage facilities;
  - generator fees paid and received; and,
  - program management/support costs directly related to storage.

  The LLW Storage performance measure tracks the total inventory of all LLW being managed in storage facilities at EM sites. This volume includes existing waste in inventory as well as newly generated waste which is stored temporarily pending treatment or disposal. It also includes long-term storage of treated waste awaiting disposal. Storage measures the volume of waste at a specific point in time, at mid-year and end of fiscal year. It is not a measure of cumulative volume, peak volume, or tracking of activity during the year.

- **Treatment**: is any method, technique, or process designed to change the physical or chemical character of waste to render it less hazardous; safer to transport, store, or dispose of; or reduce its volume. This category includes the costs of all activities related to treatment of LLW, including preparation of waste going directly to treatment; any additional characterization required for waste directly before treatment; the actual treatment; lab packing for pre-treatment; and the sorting, segregation, and characterization required for transport to treatment activities. The costs of the following activities are also included in LLW treatment (as applicable and as related to treatment activities):
  - waste documentation for, and acceptance by, treatment facilities;
  - preparation and packaging for transportation to treatment facilities;

- on-site collection of waste from generators for transportation to treatment facilities;
- transportation to treatment facilities including truck operations, on-site manifesting, as required, and unloading;
- waste tracking and data recording;
- verification/characterization of waste specific to treatment or pre-treatment including RCRA compliance sampling and analysis, assay, surface contamination survey, visual inspection, weight and dose;
- operations, surveillance and maintenance (preventive and corrective) of facilities including safety support systems, outfall monitoring and sample and analysis, inspections (fire, safety and life support systems), repackaging, spill cleanup, waste containers, record keeping, health physics, and industrial hygiene;
- ES&H including Conduct of Operations, NEPA, procedures, training, permits, SARs, ORPS, quality assurance, and technical support;
- capital equipment and general plant projects to maintain treatment facilities;
- identification and evaluation of treatment and waste minimization options;
- treatability studies;
- generator fees paid and received, as well as transportation costs of the treated waste back to the generator, if applicable; and,
- program management/support costs directly related to treatment.

The LLW Treatment performance measure represents the volume of waste going into treatment (i.e., vitrification, solidification, incineration, compaction/supercompaction, size reduction, evaporation/concentration, etc.). The volume of waste that undergoes characterization is not counted as treatment. Treatment includes volumes treated on-site in DOE facilities or sent off site for treatment at commercial or DOE facilities and then returned to the originating site. Waste that is shipped to a commercial facility for both treatment and disposal should be reported under the Disposal measure. Waste that is shipped to another DOE site for both treatment and disposal should be reported under the shipped to DOE Disposal Site measure.

- **Disposal**: is the emplacement of waste in a manner that ensures protection of human health and the environment within prescribed limits for the foreseeable future with no intent of retrieval and that requires deliberate action to regain access to the waste. This category includes all activities related to disposal of LLW. Disposal activities begin with any additional packaging required for disposal and certification so that the material meets the disposal facility's waste acceptance criteria, and includes activities for either on-site or off-site disposal. The costs of the following activities are also included in disposal (as applicable and as related to disposal activities):
  - waste documentation for, and acceptance or certification by, disposal facilities;
  - preparation and packaging for transportation to disposal facilities;
  - on-site collection of waste from generators for transportation to disposal facilities;
  - transportation to disposal facilities including truck operations, on-site manifesting, as required, and unloading;
  - verification/characterization when required for disposal;
  - operations, surveillance and maintenance (preventive and corrective) facilities including inspections, repackaging, spill cleanup, waste containers, record keeping, leachate monitoring, assays packaging or repackaging materials, and closure activities;

- ES&H including Conduct of Operations, NEPA, procedures, training, permits, recycling, waste minimization, quality assurance, SARS, ORPS, technical support, and performance assessment activities;
- capital equipment and general plant projects to maintain disposal facilities;
- identification and evaluation of disposal options;
- generator fees paid and received; and,
- program management/support costs directly related to disposal.

The **LLW On-site and Commercial Disposal** performance measure category tracks the volume of low-level waste that EM disposes on-site at DOE-owned facilities, plus the volume of waste shipped off site to commercial facilities for disposal or both treatment and disposal. Residues resulting from commercial treatment that are returned to DOE and disposed on-site are included in this category. For example, Savannah River includes disposed volumes of saltstone grout resulting from HLW processing in the LLW category.

The **LLW Shipped to DOE Disposal Site** is the performance measure category where generator sites report volumes of low-level waste that are shipped to another DOE site for disposal, including treatment and storage prior to disposal, so that it is not double counted in rolled up program totals.

Hazardous Waste

Includes all activities related to managing hazardous waste (except Remediation Waste), which is material defined as hazardous waste in 40 CFR 261.3 or material defined as hazardous by a State.

On-Site DOE Waste Disposal: Includes all costs spent by DOE's M&Os or its direct on-site subcontractors, which includes costs for transportation, treatment, storage, packaging, and characterization of hazardous waste.

Commercial Waste: Includes all costs/fees paid to external commercial vendors off-site for the transportation, treatment, disposal, packaging, and characterization of hazardous waste.

All Other Waste Types

Includes all costs for activities that are not related to the management of high-level, transuranic, mixed low-level, low-level, or hazardous waste. All other waste types may include sanitary waste and waste water. This DOES NOT include Remediation Waste.

- Sanitary waste is waste generated as a result of routine operations of a facility and that is not considered hazardous or radioactive. Sanitary waste can be solid or liquid.
- Waste waters are large-volume aqueous process effluents which are treated in a waste water treatment facilities and discharged under the Clean Water Act permits to the environment. Waste water may contain hazardous, radioactive, or mixed constituents, which are separated out in treatment, but the bulk of which is discharged as clean water.

Quantities of these waste types are not tracked as performance measures.

REMEDIATION ACTIVITIES

As discussed under WASTE ACTIVITIES, waste managed under the Environmental Restoration Program was not previously included under Waste Activities. In the future, such wastes (except for Remediation Waste) are to be included in the waste performance measures and funding categories.

Remediation Waste is defined as all waste generated, as limited below, as a result of remedial action and D&D activities performed under CERCLA, RCRA or comparable state statute that has a disposition of direct disposal (on-site or off-site) with or without treatment. This includes waste resulting from assessment, cleanup and monitoring and surveillance activities. Remediation Waste quantities will be collected through the IPABS annual data collection update, but are not tracked as a performance measure. Funding associated with Remediation Waste should only be incorporated within the appropriate budget categories under remediation activities (i.e., remedial action/release sites, facility decommissioning); funding for management of Remediation Waste is not to be reported under the waste activities (i.e., waste treatment, storage, and disposal).

Remediation Waste is limited to waste generated by remedial action and D&D activities that stays within the generating program, e.g., waste generated under a CERCLA cleanup program that is disposed of directly within a CERCLA disposal cell. Any other waste is not considered Remediation Waste and is to be counted under waste quantity and budget categories.

With this definition of Remediation Waste, certain wastes being managed by the Environmental Restoration Program that were not generated by remedial action or D&D activities, e.g., waste inherited from other programs at Portsmouth, Paducah and Fernald, are not considered Remediation Wastes and are to be included in the waste quantity and budget categories.

Four categories are reported under Remedial Action/Release Sites to clarify what activities are included under ‘cleanup’. The categories will capture estimated funding only and do not have performance measures associated with them These categories are:

- **Disposal Facility Design/Construction/Operation** category to captures the design, construction, and operation of disposal facilities. These activities were traditionally included under Remedial Action Cleanup. At some sites these activities represent a significant amount of funding that can not be associated directly with release site completions. Therefore, separating this funding will provide a better picture of true ‘cleanup’.
- **Potentially Responsible Party (PRP) Payments** category to capture PRP payments that EM is required to fund for cleanup activities at privately owned sites. These activities were traditionally included under Remedial Action Cleanup, but can not be directly associated with release site completions. Therefore, separating this funding will provide a better picture of true ‘cleanup’.
- **Groundwater Remediation** category to capture the construction and operation of groundwater remediation systems. As geographic sites (and associated release sites) get completed, it can appear that EM is making less and less progress in remediation (if a dollar per release site comparison is made). Creating a distinct category for groundwater remediation will provide a logical explanation for why funding is still be expended in Remedial Action activities.
- **Provision of Alternative Water Supply** category to capture the provision of alternative water supplies to local populations around EM sites where groundwater contamination has occurred. At some sites, a significant amount of funding is associated with these activities which can not be

directly attributed to release site completions. Creating a distinct category provides an explanation for why this funding is not directly tied to release site completions. Examples of sites where this occurs are the Brookhaven National Laboratory and the Paducah Gaseous Diffusion Plant.

The remediation activities definitions that follow apply for both budget category funding and performance measurement.

Remedial Action/Release Sites

Includes activities associated with the remedial action of release sites. A "release site" is generally defined as a unique location where a hazardous, radioactive, or mixed waste release has occurred or is suspected to have occurred. It may be associated with an area where such substances/wastes have been disposed, treated, stored, and/or used. Sites include both source areas and areas of concern where substances/wastes are located. This could also include recycling efforts.

- **Assessments**: Includes confirmation of the presence or absence of hazardous materials, characterization of the release or potential for release, as required, to determine if a basis exists for further action, accurate determination of the future and extent of problems at the site, preliminary/conceptual engineering assessment of remedial action criteria and standards, preparation of documentation, including NEPA, required by environmental statutes and derivative regulations, and selection of preferred remedial action alternatives. This includes management of wastes generated during assessment activities. This also includes program management/support directly related to remedial action assessments.

- **Cleanups:** Includes preparation of detailed design and engineering plans, implementation of the selected remedial action alternatives (including interim actions), verification of completion of remedial actions, and preparation of final documentation for completed remedial actions. This also includes program management/support directly related to remedial action cleanups; and includes recycling, minimization, treatment, storage, and disposal of all remediation wastes generated during cleanup. Remediation waste is defined as all waste that is currently generated during cleanup of release sites. The following four activities are included under "cleanup":
  - **Groundwater Remediation**: Includes design, construction and operation of groundwater remediation systems. This includes treatment of groundwater and disposal of any Remediation Waste (residue, sludges, cake, etc.) generated during groundwater remediation and activities through compliance actions that do not involve active cleanup on the part of EM. This could include natural flushing at some sites and supplemental standards or alternate concentration limits at other sites, in other words, compliance is achieved by demonstrating the existing risks are low and/or diminishing. This also includes program management/support directly related to groundwater remediation activities.
  - **Disposal Facility Design/Construction/Operation**: Includes design, construction and operation of on-site disposal facilities for disposal of remedial action wastes. These activities were traditionally captured under Remedial Action Cleanup; however, this funding cannot be associated directly with release site completions and will now be captured separately under this category. This also includes program management/support directly related to disposal facility design/construction/operation.

- **Potentially Responsible Party Payments**: Includes Potentially Responsible Party (PRP) payments, as required under Departmental agreements for cleanup of Superfund Sites under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).
- **Provision of Alternative Water Supply**: Includes activities associated with provision of alternative water supply systems (provision of potable water, construction of municipal water supply systems etc.) to local communities in cases where groundwater has been contaminated. This also includes program management/support directly related to alternative water supply.

Facility Decommissioning

Includes activities associated with decontamination, demolition and decommissioning within a facility. This includes developing required regulatory and project management documents, characterization and engineering/work plans (which establish the cleanup criteria), characterization reports, implementing projects, disposing of contamination or contaminated waste, verifying project completion, issuing completion reports, and conducting surveillance and maintenance of surplus facilities awaiting decommissioning. "Facility" refers to a single building, not a group of buildings; a walled structure; its functional, systemized equipment; and other fixtures and equipment installed therein. Facilities can be stand alone tanks if the tanks service several buildings; require significant decontamination/decommissioning efforts; and/or are being managed as a decontamination/decommissioning effort separate from nearby facilities. A facility may be a portion of a building (e.g., vault area, storage pool, fuel washing room, etc.) if that is the only section of the building to be decontaminated/decommissioned.

- **Pre-Decommissioning S&M**: Includes inspections and environmental monitoring of sites awaiting decontamination, decommissioning, and demolition activities. This also includes program management/support directly related to pre-decommissioning S&M.
- **Assessments**: Includes confirmation of the presence or absence of hazardous materials, characterization of the release or potential for release, as required, to determine if a basis exists for further action, accurate determination of the future and extent of problems at the site, preliminary/conceptual engineering assessment of decommissioning criteria and standards, preparation of documentation, including NEPA, required by environmental statutes and derivative regulations, and selection of preferred decommissioning alternatives. This includes the management of wastes generated during assessment activities. This also includes program management/support directly related to facility decommissioning assessments.
- **Cleanups:** Includes preparation of detailed engineering/work plans (which establish the cleanup criteria), decontamination and structure decommissioning and/or demolition, possible remediation of area or sub-slab soil contamination and possible contaminated groundwater, implementation of the selected decommissioning alternatives (including interim actions), disposing of contamination or contaminated waste, verification of completion of decommissioning, and preparation of final documentation for completed decommissioning. It also includes recycling, minimization, treatment, storage and disposal of all Remediation Wastes generated during decommissioning. This also includes program management/support directly related to facility decommissioning cleanups.

Post-Remediation Long-Term Surveillance and Maintenance (S&M)

Includes inspection, security, environmental monitoring (including sampling and performance monitoring of natural attenuation or other constructed groundwater treatment systems), site maintenance, regulatory compliance, compliance reporting, records management, community relations, and emergency response. This includes the mission of providing long-term care and custody at completed Uranium Mill Tailings Remedial Action (UMTRA) Title I and II sites and low-level radioactive waste disposal sites in accordance with applicable laws, regulatory requirements, agreements, site licenses, and good management practices. It also includes the operation of the Cheney Disposal Cell at Grand Junction to accept and dispose of material from UMTRA sites and the Monticello site in accordance with Public Law 104-259, and the final closure of the cell. This also includes program management/support directly related to post-remediation long-term S&M.

STABILIZATION AND DEACTIVATION ACTIVITIES

Stabilization and deactivation activities encompass a wide spectrum of tasks, such as completing the Department's high risk surplus nuclear materials stabilization, reducing site surveillance and maintenance costs by deactivating surplus facilities, and providing stewardship for surplus nuclear materials and spent nuclear fuel until final disposition.

Performance measures focus on the surplus facilities deactivated as well as surplus nuclear materials and spent nuclear fuel stabilized and subsequently made disposition ready, while awaiting final disposition. However, for the costs associated with the two phases of stabilization, where the treatment processes are often not separable, it is neither meaningful nor practical to segregate the costs. ***Classified or controlled information shall not be included in these performance measures***.

Facilities Deactivation (Estimated BA)

Includes activities performed to reduce costs associated with a surplus facility prior to its ultimate disposition and include surveillance and maintenance actions required.

- **Surveillance and Maintenance:** Includes activities directly related to deactivation, maintenance of safety basis as required by the material or facility, compliance activities, contaminated facility radiation protection, configuration management, sampling/monitoring, emergency response, security, material control and accountability, training and certification, conduct of operations, utilities, maintenance, etc. This also includes program management/support directly related to facility deactivation surveillance and maintenance. This also includes the costs of keeping a facility in a safe condition that has not been deactivated yet.
- **Deactivation**: Includes activities undertaken with the intent to reduce the physical risks and hazards at these facilities, to decrease costs associated with facility mortgage, and make these facilities available for potential reuse or eventual Decontamination and Decommissioning. This includes planning, removal of surplus materials, chemicals, supplies, classified equipment and documents, and stabilization of radioactive contamination. It also includes recycling, minimization, treatment, storage and disposal of all secondary wastes generated during deactivation. This also includes program management/support directly related to facility deactivation. Specific examples are: surplus facilities activities and operations, such as surplus material management; surplus facility conversion programs; removal of radioactive, hazardous or

mixed wastes; classified material removal activities; and deactivation related activities specifically undertaken in response to binding commitments (including compliance orders, court decisions or consent agreements) with Federal, State and local authorities.

Long Term Monitoring (Estimated BA)

Facilities Post Deactivation: Includes activities performed following facility deactivation including long-term surveillance and maintenance performed at a site or facility. The intent of long-term monitoring activities for deactivated surplus facilities is to maintain the facility in a safe condition while awaiting Decontamination and Decommissioning before its final disposition. This also includes program management/support directly related to long-term monitoring of these sites or facilities.

Specific examples include: maintenance of fire, safety and life support systems or vital safety systems specific to a deactivated surplus facility; compliance with national fire codes (e.g., NAPA) and national electric codes as appropriate for a deactivated surplus facility; radiation protection requirements; and facility security support.

Facilities Deactivation (Performance Measures)

The Facilities Deactivation performance measures will be reported within the following categories, as defined below: A) Facilities Not Yet Deactivated/Facilities Monitored; B) Facilities Deactivated During the Period and C) Long-Term Monitoring -- Facilities in Post-Deactivation Monitoring.

- **Facilities Not Yet Deactivated/Facilities Monitored:** The number of facilities that have not been deactivated completely by the end of the reporting period in accordance with the following definition. This inventory will include facilities for which deactivation plans have not been initiated but for which EM has deactivation responsibility. It will also include all facilities in various stages of deactivation. Facilities will no longer be counted here once deactivation has been completed.

  This includes the number of facilities being monitored during the period where the exclusive purpose is to maintain the building (facility) in a safe condition. This should not include any buildings (facilities) being used to further an EM programmatic goal (stabilization, waste management, etc.).

- **Facilities Deactivated During Period:** The number of facilities deactivated completely within the reporting period specified on the form in accordance with the following definition. Each facility deactivation should be reported only once, the year deactivation was/is completed. This performance measure is not a cumulative-to-date performance measure.

  Deactivation is considered complete when:
  - All process and subprocess systems have been flushed, isolated, and blanked;
  - All facility ancillary buildings have been deactivated;
  - All materials, classified materials, and wastes have been removed.

  Deactivation encompasses activities where the intent is to minimize the risks, hazards, and associated costs at facilities and to make those facilities available for potential re-use or eventual

decontamination and decommissioning. While these activities can include material handling and movement activities, the intent of such activity is to remove the material with the goal of reading the facility/system for the preferred end state. Deactivation includes removal of fuel, draining, reconfiguring and/or de-energizing of nonessential systems such as HVAC, electrical, monitoring, water, heating, and steam, removal of surplus supplies, chemicals, classified equipment and documents, limited decontamination, and removal of hazardous, mixed, and radioactive wastes. In specific cases, in order to further reduce costs or utilize specialized expertise, deactivation may not lead to long-term monitoring but move directly into facility decontamination and decommissioning. Specific activities funded within this subcategory include:

- Deactivation project planning and design efforts including development of deactivation endpoints for each individual facility;
- Flushing, isolating, and blanking of process or subprocess system (e.g., Canyon vessel flushing);
- Facility ancillary building deactivation (e.g., PUREX Ammonia Off Gas Building);
- Surplus facility conversion programs;
- Removal of radioactive, hazardous, or mixed wastes;
- Classified material removal activities;
- Deactivation related activities specifically undertaken in response to binding commitments; (including compliance orders, court decisions or consent agreements) with Federal, state, and local authorities;
- Facility security.

- **Long Term Monitoring -- Facilities in Post-Deactivation Monitoring:** The number of facilities that are in long-term monitoring after deactivation at the end of the reporting period in accordance with the following definition. This includes facilities deactivated during the reporting period (Measure B above). This measure is an inventory of facilities that have been deactivated and are awaiting Decontamination and Decommissioning or Final Disposition.

  The intent is to conduct minimum surveillance and maintenance to support facility caretaking while awaiting decontamination and decommissioning or final disposition. These activities include establishing and maintaining minimum surveillance and maintenance requirements to ensure general facility safety, structural integrity, fire safety, facility access controls, minimum security and utilities. Examples of these include, but are not limited to the following:

  - Periodic facility access and inspections;
  - Upgrades to ensure facility integrity and safety (e.g., roof replacement and maintenance);
  - Minimum environmental sampling and controls;
  - Maintenance of fire safety;
  - General OSHA compliance activities.

Nuclear Materials Stabilization (Estimated BA)

Includes activities performed to stabilize surplus nuclear materials and maintain them in a disposition ready condition prior to ultimate disposition, including surveillance and maintenance actions required.

- **Surveillance and Maintenance**: Includes activities directly related to storage of unstabilized and stabilized nuclear materials awaiting disposition, maintenance of safety basis as required by specific nuclear material, compliance activities, contaminated facility radiation protection, configuration management, sampling/monitoring, emergency response, security, material control and accountability, training and certification, conduct of operations, utilities, maintenance of stabilization system, etc. This also includes program management/support directly related to nuclear materials S&M.
- **Stabilization**: Includes activities intended to convert or move surplus nuclear materials to a form/condition or location that is safe for interim storage. Encompasses activities conducted to make these materials disposition ready. Included in this category are activities directed under the implementation plan for DNFSB Recommendation 94-1, the Plutonium Vulnerability Management Plan, and other directives related to nuclear materials. This also includes program management/support directly related to nuclear materials stabilization. Specific examples include: start-up of facilities to perform stabilization activities; design and procurement of stabilization equipment; repackaging of nuclear materials to meet storage standards and criteria; research and technology development to support stabilization activities; treatment of materials to forms suitable for safe interim and long-term storage.

Nuclear Materials (Performance Measures)

Four quantities/amounts are to be reported for each of the material types to be stabilized or made disposition ready: (1) Life-Cycle (Total to be Processed), (2) FY 1998 Actual, (3) FY 1999 Planned, and (4) FY 2000 Planned. The measures collected for nuclear materials should include only those materials under the responsibility and control of EM. The exception would be materials that are known to be transferred either into, or out of, EM control within the budget execution year. In this case, the material transfer should be noted and included in the EM measures.

- **Life-Cycle (Total to be Processed):** Total amount of material to be processed or made disposition ready life-cycle beginning in FY 1997. This measure is intended to quantify the amount that will have to be processed or made disposition ready, and should not include materials processed or made disposition ready prior to FY 1997. The data provided for this section should not be the current material inventory. The amount of material should represent the material's pre-stabilization (treatment) or post-stabilization (treatment) status (mass, volume, number of containers, or handling units). The Life-Cycle (Total to be Processed) should incorporate waste minimization principles where appropriate.

- **Material Stabilized:** The amount of material reported in this section should represent the material's pre-stabilization (treatment) status (mass, volume, number of containers, or handling units).
  - **Stabilization** encompasses activities where the intent is to convert nuclear material to a stable form suitable for storage, either safe interim or long-term, depending upon the programmatic plans for the material. This would include staging, preparation, and operations actions. These actions are taken to both manage and reduce risks, and could include movement or consolidation of nuclear material to a safer location, processing of material to a form suitable for safe interim and/or long-term storage, repackaging of nuclear materials to meet storage standards and criteria if this packaging effort included some type of stabilization activity such as "metal brushing," etc., and repackaging,

preparation or treatment of nuclear materials for disposal as waste. Credit should be given to a progression of stabilization activities, such as converting a liquid to a solid oxide, then packaging to a container of metal or oxide stabilized for meeting long-term storage requirements. The final output from "Material Stabilized" should be used as input for "Total to be Processed" under the "Material Made Disposition Ready" category. Specific examples of stabilization activities include:

- Actions taken to address the vulnerabilities identified in the DOE Plutonium Vulnerability Assessment;
- Operation of facilities/processes to perform stabilization activities (e.g., F-Canyon, PFP Vertical Calciner);
- Repackaging of nuclear and non-nuclear materials to meet interim criteria;
- Processing of material to form suitable for safe interim and long-term storage;
- Repackaging, preparation or treatment of materials for disposal as waste.

The following types of Nuclear Material will be reported under "stabilization" in the units specified:

1. *Plutonium Solution (L)* - Amount of plutonium solution stabilized, in liters, during the reporting period. This amount should represent the amount of plutonium solution input into the treatment facility (amount prior to stabilization). Do not include Pu_{242} or Pu_{238} in these quantities- -include Pu_{242} and Pu_{238} in "Other NM in solution form".

2. *Plutonium Residue (Kg Bulk)* - Amount of bulk plutonium residue stabilized in kilograms during the reporting period. This amount should represent the amount of plutonium residue input into the treatment facility (amount prior to stabilization). Do not include Pu_{242} or Pu_{238} in these quantities--include Pu_{242} and Pu_{238} in "Other NM in other forms". For the SRS Pu residues a conversion factor, for performance measurement purposes only of 1.5 Kg per can oxides, 2 Kg per can metal and 250 g per can sand, slag and crucibles. Residues need to be clearly distinguished from oxides.

3. *Plutonium Metal/Oxides (Container)* - Number of plutonium metal/oxide containers stabilized during the reporting period. This amount should represent the number of plutonium metal/oxide containers input into the treatment facility (amount prior to stabilization).Do not include Pu_{242} or Pu_{238} in these quantities- -include Pu_{242} and Pu_{238} in "Other NM in other forms". For classification issues at SRS, the metals and oxides will be reported in a single PBS.

4. *Uranium Solution (L)* - Amount of uranium solution stabilized, in liters, during the reporting period. This amount should represent the amount of uranium solution input into the treatment facility (amount prior to stabilization). Do not include U_{233} in these quantities- -include U_{233} solution in "Other NM in solution form".

5. *Uranium in other forms (Kg Bulk)* - Amount of uranium in other forms stabilized in kilograms during the reporting period. This amount should represent the

amount of uranium in other forms input into the treatment facility (amount prior to stabilization). Do not include U_{233} or SNF in these quantities- -include solid U_{233} and SNF (to be processed) in "Other NM in other forms".

6. *Other NM in Solution form (L)* - Amount of other nuclear material solution stabilized, in liters, during the reporting period. This amount should represent the amount of other nuclear material solution input into the treatment facility (amount prior to stabilization). Other nuclear materials include: Pu_{242}, Pu_{238} ,U_{233} , Am-Cm, and Np.

7. *Other NM in other forms (Handling Unit)* - Amount of other nuclear material in other forms stabilized during the reporting period. Report in the appropriate handling unit. This amount should represent the amount of other nuclear material in other forms input into the treatment facility (amount prior to stabilization). Other nuclear materials include: Pu_{238} , U_{233}, Np, Cs, Sr, MK-31, MK-16/22, Failed TTR, Failed EBRII, and Additional TRR and can be in the form of elements, assemblies, slugs, rods, ingots, cans, etc.

8. Material Made Disposition Ready: Amount of material to be made disposition ready during the reporting period. The amount of material provided should represent the material's post-stabilization (treatment) weight, mass, volume, or number of containers. The data provided for this section should not be a current material inventory.

"Disposition-ready" materials are prepared for transportation, long-term storage, or final disposition. In cases where material is stabilized and packaged in a single short-term process, credit for meeting both stabilization and "disposition-ready" performance measures will be taken during the same reporting period.

Activities under "disposition-ready" may include: repackaging materials in a can to meet DOE 3013 Standards.

The following types of Nuclear Material will be reported under "disposition ready" in the units specified:

1. *Plutonium Metal/Oxides or in other forms (Container)* - Number of post-treatment containers made disposition ready.

2. *Uranium Solution (L)* - Amount of post-treatment uranium solution made disposition ready on-site or shipped off-site.
3. *Uranium in other forms (kg Bulk)* - Kilograms bulk of post-treatment uranium in other forms made disposition ready on-site or shipped off-site.

4. *Other NM in Solution form (L)* - Amount of post-treatment other nuclear material solution made disposition ready. (Pu_{242} and Pu_{238} solutions stabilized and sent off-site prior to FY 1998.)

5. *Other NM in other forms (Container)* - Amount of post-treatment other nuclear material containers made disposition ready.

Spent Nuclear Fuel Stabilization (Estimated BA)

Includes activities performed to stabilize Spent Nuclear Fuel (SNF) and maintain it in a disposition ready condition prior to its ultimate disposition, including surveillance and maintenance actions required.

- **Surveillance and Maintenance**: Includes activities directly associated with storage of unstabilized SNF, storage of stabilized SNF awaiting disposition, specific SNF compliance activities, radiation protection, sampling/monitoring, emergency response, security, SNF inventory control and accountability, training and certification, conduct of operations, utilities, maintenance of SNF systems, etc. This also includes program management/support directly related to SNF surveillance and maintenance.

- **Stabilization**: Includes SNF stabilization activities to treat vulnerable SNF and store or place it into a safe condition for an interim period of time (assumed to be 40 years) which is compatible with the permanent repository (i.e. disposition ready) until they are transferred to a permanent repository. This also includes program management/support directly related to spent nuclear fuel stabilization. Specific examples include: spent nuclear fuel characterization; technology development; project procedure review; other SNF-related drivers and activities; vulnerability/risk assessment support; and foreign research reactor Environmental Impact Statement Record of Decision.

Spent Nuclear Fuel (Performance Measures)

Spent Nuclear Fuel (SNF) includes fuel, targets (does not include medical isotope targets, which are low level waste), blanket assemblies, and slugs. SNF will be measured in two units, Metric Tons of Heavy Metal (MTHM) and Cubic Meters (M^3). Do not double count spent fuel inventories by putting the same fuel in multiple fuel- type subcategories.

THE FOLLOWING SPENT NUCLEAR FUEL PERFORMANCE MEASURE CATEGORIES AND SUBCATEGORIES ARE ONLY VALID FOR THE YEARS PRIOR TO FY 2001:

- **Fuel in Stabilization Process but Not Yet Stabilized**: Includes the SNF (MTHM and M^3) that still requires stabilization at the end of the reporting period in accordance with the following definition:

  This subcategory represents the quantity of spent nuclear fuel that has been determined to need, or is assumed to need, further stabilization and packaging prior to it being suitable for storage while it awaits disposition. If fuel is in stable form and only needs to be repackaged, it would not be shown in this subcategory but in Subcategory C. Similarly, if it only needed to be moved to its final storage location, but did not need to be stabilized or repackaged, it would not be shown here but in Subcategory C.

- **Fuel Stabilized During Period:** The total amount (MTHM and M^3) of SNF stabilized within the reporting period specified: Spent fuel stabilization encompasses activities where the intent is to treat, where necessary, spent nuclear fuel to a safe, stable state to a point where it can be made disposition ready including all staging and preparation actions. These actions are taken to both manage and reduce risks. Included in this subcategory are activities directed toward stabilizing vulnerable spent nuclear fuel by treating spent fuel in accordance with the implementation plan for DNFSB Recommendation 94-1, the Foreign Research Reactor EIS Record of Decision, IMNM EIS Record of Decision and other directives related to interim and long-term storage of spent nuclear fuel. Specific examples of spent fuel stabilization activities include:

  - Maintaining spent fuel in reactor basins awaiting stabilization (e.g., K-Basin, K&L Reactor basins)
  - Maintenance of vital safety systems (e.g., basin/storage pool cooling water systems)
  - Facility-specific environmental monitoring (e.g., air emission, wastewater discharges)
  - Process-specific monitoring and sampling (e.g., spent fuel pool water chemistry controls)
  - General facility/material surveillance and maintenance
  - Spent fuel activities directed by the 94-1 Implementation Plan
  - Spent nuclear fuel technology development for stabilization and interim storage
  - Construction and/or operation of facilities to perform stabilization activities
  - Design and procurement of stabilization equipment
  - Movement of spent nuclear fuel (without conversion) to a safer location (e.g., CPP-603 fuel shipments to CPP-666)

- **Stable Fuel, Not Disposition Ready**: The amount of spent fuel (MTHM and M^3) in inventory which has been stabilized but still requires additional activity before it is in its final form for disposition (i.e., the SNF may not be the final packaging required for transportation or long-term storage particularly if the packaging or destination acceptance criteria will not be ready/known for a period of time.)

  This measure identifies the quantity of spent nuclear fuel that is stable but still requires packaging or movement into the final configuration needed for disposition ready storage.

  Fuels in this inventory have not been prepared to allow for transportation, long-term storage, or final disposition. Further stabilization of this fuel would be required, but packaging and subsequent movement to accommodate storage in other locations would be allowed for fuel in this subcategory.

- **Fuel Made Disposition Ready During Period**: The total amount (MTHM and M^3) of SNF made disposition ready within the reporting period. SNF is prepared as best as known practices will allow for transportation, long-term storage, or final disposal. In some cases, stabilization will constitute "disposition ready." However, for the purposes of performance measures, "credit" can be taken under both steps of mission accomplishment, stabilization and disposition ready. Inventory will move from in-process or pre-stabilization storage directly to disposition ready. Activities under disposition ready may include:
  - Repackaging/movement of stabilized SNF from wet to dry storage
  - Technology development for disposal
  - Repackaging of spent nuclear fuel to meet storage standards and criteria

- **Fuel in Disposition Ready Storage:** The inventory of SNF (MTHM and M^3) in disposition ready storage at the end of the reporting period in accordance with the following definition:

  The intent is to maintain stabilized and disposition ready spent nuclear fuel in a safe and stable configuration pending final disposition. Examples of these activities include:
  - Design and construction of dry storage facilities
  - Maintenance and operation of spent fuel dry storage facilities
  - Storing spent fuel in a final form prior to ultimate disposition
  - Applicable safeguards and security
  - Fuel inventory activities
  - General facility surveillance and maintenance directly associated with long-term storage activities

THE FOLLOWING SPENT NUCLEAR FUEL PERFORMANCE MEASURE CATEGORIES AND SUBCATEGORIES ARE ONLY VALID FOR FY 2001 AND BEYOND:

- **Quantity of SNF Treated for Stabilization/Disposal:** This performance measure identifies the quantity of spent nuclear fuel that is or may be processed using conventional chemical separation or treated using the proposed Melt and Dilute technology, or Electrometallurgical Process. The SNF will be measured in two units, Metric Tons of Heavy Metal (MTHM) and Cubic Meters (M^3). Examples of SNF included in this category include:
  - Reprocessing of EBR-II fuel at Savannah River
  - Treatment of Aluminum Fuel using Melt and Dilute technology at Savannah River
  - Treatment of Sodium-Bonded Fuel using Electrometallurgical Process at Idaho

- **Quantity of SNF Moved to Dry Storage:** This performance measure identifies the quantity of spent nuclear fuel that is currently stored in vulnerable storage conditions and is moved to dry storage within the reporting period. Examples of SNF included in this category include:
  - At Idaho, movement of TMI-2 SNF from unlined water pool to safer dry storage
  - At Hanford, movement of K-Basins fuel from wet basins to Canister Storage Building
  - At Oak Ridge and Idaho, movement of SNF from vulnerable dry wells to safer dry storage

- **Quantity of SNF Prepared and Shipped for Consolidation:** This performance measure identifies the quantity of spent nuclear fuel (MTHM and M^3) that is prepared for shipment and shipped offsite for consolidation purposes. Examples of this activity include packaging of non-aluminum based fuel at Oak Ridge National Laboratory and shipment of this fuel to Idaho. Another example of this activity includes shipment of HFIR fuel to the Savannah River Site.

Technology Deployments

Deployment is the use of a technology or technology system toward accomplishment of one or more site-specific DOE Environmental Management program cleanup objectives as applied to actual waste requiring management at the site.

Construction

Includes funding for capital line item construction projects.

OPERATIONAL ACTIVITIES

Technical Program Support

Includes crosscutting technical support and contract expertise to assist the Federal staff with activities such as evaluating alternative end-state facility condition, verifying building characterization, developing system modeling and facility data tracking systems, and reviewing transition management plans. It also includes activities related to strategic planning, information activities and field management of technology development tasks by DOE Technical Program Officers and contractor Technical Program Managers. Also included are costs for preparation of project baseline summaries, risk data sheet documentation, integrated priority lists, site-wide technical baselines, integrated site-wide facility plans, systems engineering, and complex-wide plans. This DOES NOT include program support/management costs that can be directly linked to a specific functional element (cleanup, assessment, deactivation, treatment, etc.). This DOES NOT include Agreements-in-Principles, security investigations, or grants to State, local and tribal governments.

Conceptual Design

Includes efforts to develop project scope that will satisfy program needs; assure project feasibility and attainable performance levels; develop reliable cost estimates and realistic schedules to provide a complete description of the project for Congressional consideration; and develop project criteria and design parameters for all engineering disciplines, identification of applicable codes and standards, quality assurance requirements, environmental studies, materials of construction, space allowances, energy conservation features, health, safety, safeguards and security requirements, and any other features or requirements necessary to describe the project.

Other Project-Related (Bridge) Costs

Includes efforts in Pre-Title I activities (except for Conceptual Design) to include preliminary safety analysis reports, preparation of Project Data Sheets, design criteria, National Environmental Policy Act (NEPA) documentation, and formulation of Quality Assurance Criteria; research and development (R&D) necessary for fabrication, testing and rework of prototype equipment; R&D (scale-up or demonstration plants of high-risk technology) required prior to the start of construction; site suitability testing and evaluation; quality assurance related to site suitability and testing; regulation compliance; systems studies and selected engineering services; and institutional activities related to facility siting and external interactions.

Uranium Leasing

Includes administration of leases for uranium on land belonging to the United States pursuant to Section 5(b)6 of the Atomic Energy Act of 1954.

Federal Contribution to the UE D&D Fund

Includes the annual Defense contribution made into the Uranium Enrichment Decontamination and Decommissioning Fund.

Landlord

Includes planning, operating, maintenance, general plant projects, and capital equipment activities associated with general purpose site-wide services. This includes activities such as: intergovernmental/stakeholder services such as Citizens Advisory Boards; down winder litigation; executive direction and administration; environmental safety and health; facilities management/engineering; maintenance; utilities; safeguards and security for facilities and materials; information/outreach activities; logistic support; quality assurance/compliance; laboratory support; transportation, laboratory-directed research and development; payments-in-lieu-of-taxes; oversight/state permits; site specific advisory boards; health information and screening; the Hazardous Materials Management and Emergency Response (HAMMER) training project; support for geologic surveys; support for National Monuments or museums; and other activities of similar nature. This DOES NOT include costs associated with Agreements-in- Principle, state, local and tribal grants, mission-specific support services, or the cost of security investigations.

Agreements-in-Principle/Grants

Includes Agreements-in-Principle with State, local and tribal governments, as well as other regulatory bodies which provide oversight responsibilities. This also includes grants for research with colleges, universities and consortiums. This DOES NOT include Science grants funded under the Office of Science and Technology.

Security Investigations

Includes all funding for contractor security investigations (previously budgeted within the Office of Security Affairs). This will include costs for field contractor personnel that utilize security clearances.

Nuclear Criticality Safety Training

Includes funding for implementation of DNFSB Recommendation 97-2. This includes previous nuclear criticality efforts for DNFSB 93-2, which have been crosswalked to this project.

Pollution Prevention -- Cleanup and Stabilization Waste Reduction Goal

[This is a placeholder section to define the terms used in the Cleanup/Stabilization Goal. The actual goal definition is under revision by EM Headquarters. Concurrence with the goal definition is expected in November 1998].

MULTI-SITE ACTIVITIES

REPORTING BUDGET AUTHORITY FOR THESE CATEGORIES IS AN EM HEADQUARTERS RESPONSIBILITY -- DEFINITIONS ARE NOT INCLUDED IN THIS GUIDANCE.